

REMARKS

Claims 1-26 are pending. By this Amendment, claims 7, 10, 12, 23, 24 and 26 are amended. Claim 9 has been cancelled. The amendment of claims 7, 10, 12, 23, 24 and 26 is not intended to narrow the scope of the claims. The amendment of claims 7, 12, 23, 24 and 26 corrects an antecedent reference. The amendment of claim 10 is supported by the specification, for example, with respect to the description of Figures 1, 2 and 2A from page 6 through 8. No new matter is introduced by the amendment.

Claim Rejections Under 35 U.S.C. § 112

Claims 7, 12, 23, and 24 are rejected under 35 U.S.C. § 112.

With regard to independent claim 7, the Examiner stated that the use of the statement "wherein an outline of a change" renders the claim indefinite as it is unclear what sort of change in visual data is the object of the outline. Claim 7 has been amended to clarify the fact that a significant change in visual data comprises an object and this object has an outline. Support for the claim is to be found on page 9, lines 21-30 of the specification.

With regard to claim 12, the Examiner has noted that there is insufficient antecedent basis for the limitation "wherein the buoy subsystem" in line 3 of the claim. Claim 12 has been amended to depend from claim 11 which provides the proper antecedent basis.

With regard to claims 23 and 24, the Examiner has stated that each of the two claims recite "the method" in the preamble of the claims and that there is insufficient antecedent basis for this limitation in the claims. Claims 23 and 24 have been amended so that they now depend from independent claim 22 which provides the proper antecedent basis.

With regard to claim 26, the Examiner has stated that claim 26 recites the limitation "system" in the preamble of the claim and that there is insufficient antecedent basis for the limitation in the claim. Claim 26 has been amended so that it depends from independent claim 25 which provides the proper antecedent basis.

Based on the above comments, the claims are clear. Applicants respectfully request withdrawal of the rejection under 35 U.S.C. § 112.

Claim Rejections Under 35 U.S.C. § 102

Claims 1, 2, 8, 9, 22, 25 and 26 are rejected under 35 U.S.C. §102(b) as being anticipated by Pollak et al. (U.S. Patent No. 6,106,297). Applicants respectfully request reconsideration of the rejection based on the following comments.

Pollak et al. does not show every element of the claimed invention. *See In re Bond*, 910 F.2d 831, 832 (Fed. Cir. 1990) ("For a prior art reference to anticipate in terms of 35 U.S.C. § 102, every element of the claimed invention must be identically shown in a single reference."); *see also* MPEP § 2131.

With regard to independent claims 1 and 22, the system according to and disclosed in Pollak et al. does not contain a spotter subsystem as recited and required in both claims 1 and 22. With regard to independent claim 9, claim 9 has been cancelled and dependent claim 10 has been amended to incorporate all of the limitations of independent claim 9 from which claim 10 depends. Consequently, claim 10 as amended recites a spotter subsystem as described above, but which is not disclosed in Pollak et al.

The naval virtual target range system and method of the instant application allow a survey team and other weapons system personnel to train in *a realistic or hardware-in-the-loop environment*. The exercise is conducted with live or simulated fire. The virtual target range system comprises a control subsystem which is operatively connected to a naval weapon system and has a computer system for implementing a three-dimensional graphical view of a naval virtual target range for use in conjunction with a *naval weapon system fire exercise* and for calculating results of the naval weapon system fire exercise from selective data provided by the naval weapon system. The spotter subsystem monitors virtual impact points on the virtual target range. This spotter subsystem is operatively connected to the control subsystem and has a display for viewing three-dimensional results in still or animated form of the *naval weapon system fire exercise* conducted with *live* or simulated *fire*. (Page 7, lines 28-31 of the Application). The "exercise" disclosed by Pollak, on the other hand, is computer generated and therefore virtual in its entirety. Pollak describes the exercise as a "simulation-based training exercise." (Col. 2, line 23). For example, the Pollak specification states, "[t]he invention pertains to control and management systems and methods for use with multiple, simultaneously operating, *simulators*." (Emphasis supplied). (Col. 1, lines 6-8). Any doubt as to the virtual nature of the "exercise" and "simulators" disclosed by Pollak is dispelled by the fact that "[while] the *exercise* is underway, the trainer or the operator can introduce either friendly or opposing equipment, such as vehicles or the like, into the *virtual terrain, being presented by the simulators*." (Emphasis supplied) (Col. 6, lines 56-59). The virtual nature of the 'exercise' and 'simulators' disclosed by Pollak is also evident by the description provided in the Pollak specification. Notably, "[o]nce the exercise is *drawn* it is converted to a DIS PDU log file or

broadcast to the network" (Col. 3, lines 5-8). (Emphasis supplied). Also, the 'exercise' of Pollak is created using an '*animation technique*.' (Col. 3, line 13). The reference to "a spotter subsystem display for viewing three-dimensional graphic results of the fire exercise generated by the computer system" of Pollak et al. in paragraph 8 of the Office Action and the "Viewer" in paragraph 11 of the Office Action is in reality, no more than a "*display* for the system 30, of Pollak [which] under control of the manager software 20 illustrates the elements of the exercise as *the various simulation units* 14, 16 are carrying out the [virtual] exercise on the *virtual terrain or battle field*." (Col. 6, lines 50-55). (Emphasis supplied). As exemplified in Figure 1 and described on page 8, lines 5-10 of the instant Application, the *spotter subsystem* of the instant invention *includes hardware-in-the-loop such as a transmitter-receiver, global positioning system, in addition to the spotter subsystem display* for viewing a three-dimensional graphical view of a naval virtual target range. Therefore, Pollak does not disclose or teach the spotter subsystem of Applicant's invention.

With respect to independent claim 25, claim 25 discloses a means for a spotter to view three-dimensional results of the naval weapon system fire exercises. As discussed above, such an exercise can be a *live fire* exercise as opposed to the entirely *virtual* exercises disclosed in Pollak. The aerial subsystem disclosed by Applicant, includes an aerial vehicle that may be manned or unmanned. The aerial vehicle is capable of determining its own global position and has either a camera system or millimeter-wave radar, or both, for determining the impact points of a naval weapon system fire exercise relative to the aerial vehicle. The aerial vehicle is operatively connected to the control subsystem also to provide data thereto. As discussed above, the "means for a spotter to view three-dimensional results of the [virtual] weapon system fire

exercises" mentioned by Examiner in paragraph 12 of the Office Action with respect to Pollak et al. is merely a "*display* for the system 30, [which] under control of the manager software 20 illustrates the elements of the exercise as *the various simulation units* 14, 16 are carrying out the [virtual] exercise on the *virtual terrain or battle field*." (Col. 6, lines 50-55). (Emphasis supplied).

Therefore, because Pollak et al. does not disclose either a spotter subsystem or a means for a spotter, Pollak et al. is not an anticipating reference. With respect to the dependent claims 2, 8 and 26, noted by the Examiner. The arguments with respect to these dependent claims are presently moot in view of the patentability of independent claims 1 and 22. Applicants respectfully request withdrawal of the rejection of independent claims 1, 9, 22 and 25 as anticipated by Pollak et al. (U.S. Patent No. 6,106,297) under 35 U.S.C. § 102(b). Applicants also respectfully request withdrawal of the rejection of dependent claims 2, 8, and 26 which depend from allowable independent claims as noted above.

Claim Rejections Under 35 U.S.C. § 103

The Examiner rejected claims 3, 4, 12 and 15 as being unpatentable over Pollak et al. (U.S. Patent No. 6,106,297) in view of Blume. (U.S. H1618) under 35 U.S.C. § 103(a). The Examiner states that Blume teaches a plurality of sea buoys that may be interconnected through a GPS system to form a sonobuoy field that transmits position of all of the buoys to a receiving vehicle. Therefore, according to the Examiner, "it would have been obvious to one of ordinary skill in the art at the time of invention to provide a target range system with the capability to attach a plurality of weapons and targeting subsystems including a field of sonobuoys that

transmits position of all of the buoys to a receiving vehicle to form a sea going target field for the purposes of providing target and results information for all weapons landing among the sonobuoys." Applicants respectfully request reconsideration of the rejection based on the following comments.

With respect to dependent claims 3, 4 and amended claim 12 all of which depend from independent claim 1, and with respect to independent claim 15, all of which recite a spotter subsystem limitation, the deficiencies of the Pollak patent are discussed above. Specifically, the Pollak patent does not disclose a *spotter subsystem*. Neither does the Pollak reference disclose a naval weapon system fire exercise. The 'exercise' disclosed in Pollak is computer generated and therefore virtual in its entirety. Pollak describes the exercise as a "simulation-based training exercise." (Col. 2, line 23) where the "various simulation units are carrying out the exercise on the *virtual terrain* or battle field." (Col. 6, lines 53-55). The fact that the 'exercise' and 'simulators' disclosed by Pollak are virtual is further evidenced by Pollak stating that "[while] the *exercise* is underway, the trainer or the operator can introduce either friendly or opposing equipment, such as vehicles or the like, into the *virtual terrain, being presented by the simulators*." (Emphasis supplied) (Col. 6, lines 56-59). There is no suggestion of teaching of a live weapon system in Pollak.

Because the entire teaching of Pollak et al. is to a virtual 'exercise' simulations, one of ordinary skill in the art will not be motivated to combine the *virtual* 'exercise' simulation occurring on a virtual terrain as disclosed by Pollak with the field of *physical* sonobuoys that transmit position of all of the buoys to a receiving vehicle as disclosed by Blume. Additionally, not only does Pollak not teach the *naval weapon system fire exercise* conducted with *live fire*

that can interact with a *physical* target as taught by Applicant, Pollak actually teaches away from the use of any *physical* weapon system because the system as disclosed by Pollak is entirely virtual and therefore cannot interact with the physical field of sonobuoys as taught by Blume. In particular, it is not obvious how determining the geoposition of each sonobuoy comprising a sonobuoy field as taught by Blume is relevant to a totally virtual system as taught by Pollak. Thus, it would not be obvious to one skilled in the art to combine Pollack and Blume in the manner postulated by the Examiner.

The Examiner rejected claims 5, 10, 13, 16, 18-20 and 24 as being unpatentable over Pollak et al. (U.S. Patent No. 6,106,297) in view of Tye (U.S. Patent No. 4,308,015) under 35 U.S.C. § 103(a). It is asserted that Tye teaches an aerial warfare system in which the air vehicles are outfitted with camera and radar systems to provide data to the target range system. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the system taught by Pollak et al., with the teaching of Tye to produce a system in which aerial observations of live fire exercises may be transmitted to the target system in real time and recorded for later analysis. Applicants respectfully request reconsideration of the rejection based on the following comments.

As discussed above, the 'exercise' disclosed by Pollak is computer generated and therefore virtual in its entirety. Pollak describes the exercise as a "simulation-based training exercise." (Col. 2, line 23) with the "various simulation units are carrying out the exercise on the virtual terrain or battle field." (Col. 6, lines 53-55). Pollak does not teach or suggest interfacing the purely virtual system as disclosed in the Pollak patent with a physical, external live fire system. Tye teaches the principle of firing *simulated* bullets at real targets. (Tye, Col. 3, lines

18-20.) (Emphasis supplied). Neither Pollak nor Tye teach the *naval weapon system fire exercise* conducted with *live fire* that can interact with a *physical* target as taught by Applicant. Therefore, it would not be obvious to one of ordinary skill in the art at the time of the invention to combine the virtual system taught by Pollak et al., with the physical aerial warfare system taught by Tye to produce a system as disclosed by Applicant.

The Examiner rejected claims 11, 17, and 23 as being unpatentable over Pollak et al. in view of Blume, and further in view of Tye under 35 U.S.C. § 103(a). Applicants respectfully request reconsideration of the rejection based on the following comments.

As discussed above, Pollak teaches a system that is entirely *virtual*. Blume teaches determining the geoposition of each sonobuoy comprising a [*physical*] sonobuoy field, where the geoposition of the individual sonobuoys is transmitted to a receiving vehicle. Tye teaches the principle of firing *simulated* bullets at real targets. Clearly neither Pollak, nor Blume or Tye teach the *naval weapon system fire exercise* conducted with *live fire* that can interact with a *physical* target as taught by Applicant. Therefore, it would not be obvious to one of ordinary skill in the art to combine Pollak, in view of Blume and further in view of Tye because none of the cited references teaches *live* fire as disclosed by Applicant.

Because neither of the cited references disclose a naval virtual target system, or a naval weapon system or a spotter subsystem, the combined disclosures of the cited references do not teach or suggest the spotter subsystem or the naval weapon fire exercise of Applicants' invention. Furthermore, there is no motivation to combine the references since none of the references teach a physical, live weapon fire as disclosed by Applicant.

Because claims 11, 17 and 23 depend from claim 1, which is patentable over Pollak et al., Applicants respectfully request withdrawal of the rejection of claims 11, 17 and 23 as being unpatentable over Pollak et al. in view of Blume and further in view of Tye under 35 U.S.C. § 103(a).

CONCLUSION

In view of the foregoing, it is submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested.

The Examiner is invited to telephone the undersigned if the Examiner believes it would be useful to advance prosecution.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Brad Pedersen', with a long horizontal line extending to the right.

Brad Pedersen
Registration No. 32,432

Customer No. 24113
Patterson, Thunte, Skaar & Christensen, P.A.
4800 IDS Center
80 South 8th Street
Minneapolis, Minnesota 55402-2100
Telephone: (612) 349-5774